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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,971	01/06/2006	Jean-Francois Stumbe	283556US0PCT	7326
22850	7590	08/05/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER MAKSYMIONKO, JOHN M				
ART UNIT 1796		PAPER NUMBER		
NOTIFICATION DATE 08/05/2008		DELIVERY MODE ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

**Application No.**

10/563,971

**Applicant(s)**

STUMBE ET AL.

**Examiner**

John M. Maksymenko

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

1. The amendment filed 8 May 2008 has been entered. Claims 1-21 remain pending in the application.

### *Claim Rejections - 35 USC § 102*

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1-3, 5-9, and 11-12 rejected under 35 U.S.C. 102(b) as being anticipated by Park et al. (Cationic Hyperbranched Poly(Amino Ester): A Novel Class of DNA Condensing Molecule with Cationic Surface, Biodegradable Three-Dimensional Structure, and Tertiary Amine Groups in the Interior, *J. Am. Chem. Soc.* **2001**, *123*, 2460-2461).

Regarding claim 1, Park discloses a process for preparing hyperbranched polymers comprising reacting compounds of the formula I shown where X is sulfur or oxygen, R<sup>1</sup> and R<sup>3</sup> are identical or different and are hydrogen, C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>3</sub>-C<sub>12</sub> cycloalkyl or C<sub>6</sub>-C<sub>14</sub> aryl, R<sup>2</sup> and R<sup>4</sup> are identical or different and are hydrogen, C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>3</sub>-C<sub>12</sub> cycloalkyl, C<sub>6</sub>-C<sub>14</sub> aryl, Z<sup>1</sup> and Z<sup>2</sup> are identical or different and are COOH or COOR<sup>6</sup>, the radicals R<sup>6</sup> being identical or different and being C<sub>1</sub>-C<sub>6</sub> alkyl, formyl or CO-C<sub>1</sub>-C<sub>6</sub> alkyl, R<sup>5</sup> identically or differently at each occurrence is C<sub>1</sub>-C<sub>6</sub> alkyl or hydrogen,

and  $n$  is an integer from 2 to 10, (Scheme 1, Monomer 1) optionally with at least one compound of the formula Ia in the presence of a catalyst (AIOPr<sub>3</sub>: Page 2460, Column 1, Last Line) in the absence of a polyfunctional compound ("in the absence of the core moiety": Page 2460, Column 2, 1<sup>st</sup> Paragraph).

Regarding claim 2, Park discloses all of the claim limitations as set forth above. Additionally the reference discloses the process wherein R<sup>1</sup> and R<sup>3</sup> are identical (Scheme 1, Monomer 1).

Regarding claim 3, Park discloses all of the claim limitations as set forth above. Additionally the reference discloses the process wherein R<sup>2</sup> and R<sup>4</sup> are identical (Scheme 1, Monomer 1).

Regarding claim 5, Park discloses all of the claim limitations as set forth above. Additionally the reference discloses the process wherein Z<sup>1</sup> and Z<sup>2</sup> are COOR<sup>6</sup> (Scheme 1, Monomer 1).

Regarding claim 6, Park discloses all of the claim limitations as set forth above. Additionally the reference discloses the process wherein the radicals R<sup>6</sup> are each identical (Scheme 1, Monomer 1).

Regarding claim 7, Park discloses all of the claim limitations as set forth above. Additionally the reference discloses the process wherein R<sup>1</sup> and R<sup>3</sup> are identical and are methyl or hydrogen, R<sup>2</sup> and R<sup>4</sup> are identical and are each hydrogen, and Z<sup>1</sup> and Z<sup>2</sup> are each COOR<sup>6</sup> (Scheme 1, Monomer 1).

Regarding claim 8, Park discloses all of the claim limitations as set forth above. Additionally the reference discloses the process wherein from 0 to 1000% by weight of

compound of the formula Ia are used, based on compound of the formula I. (0%: Scheme 1).

Regarding claim 9, Park discloses all of the claim limitations as set forth above. Additionally the reference discloses the process wherein the reaction is carried out in the presence of at least one polyfunctional compound (Compound 3 core, Scheme 1).

Regarding claim 11, Park discloses all of the claim limitations as set forth above. Additionally the reference discloses the process wherein the reaction is carried out in the presence of an acidic inorganic, organometallic or organic catalyst or a mixture of two or more acidic inorganic, organometallic or organic catalysts (AlOPr<sub>3</sub>: Page 2460, Column 1, Last Line).

Regarding claim 12, Park discloses a hyperbranched polymer obtained by the process according to claim 1 (Scheme 1, Compound 4)

***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al., as applied to claim 1 above, (Cationic Hyperbranched Poly(Amino Ester): A Novel Class of DNA Condensing Molecule with Cationic Surface, Biodegradable Three-Dimensional Structure, and Tertiary Amine Groups in the Interior, *J. Am. Chem. Soc.* **2001**, 123, 2460-2461).

Regarding claim 4, Park discloses the limitations of claim 1 as set forth above. The reference does not explicitly disclose the process wherein  $Z^1$  and  $Z^2$  are each COOH. Because hydrolysis of the COOR<sup>6</sup> (disclosed to the COOH claimed would be an obvious and, in the presence of water, unavoidable reaction, it would have been obvious to one having ordinary skill in the art at the time the invention was made to hydrolyze the monomer of Park to achieve the claimed monomer.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al., as applied to claim 1 above, (Cationic Hyperbranched Poly(Amino Ester): A Novel Class of DNA Condensing Molecule with Cationic Surface, Biodegradable Three-Dimensional Structure, and Tertiary Amine Groups in the Interior, *J. Am. Chem. Soc.* **2001**, 123, 2460-2461) in view of Frey et al. (Enzyme-Catalyzed Synthesis of Hyperbranched Aliphatic Polyesters, *Macromol. Rapid Commun.* **2002**, 23, 292-296).

Regarding claim 10, Park discloses the limitations of claim 1 as set forth above. The reference does not explicitly disclose the process wherein the reaction is carried out in the presence of at least one enzyme.

Frey teaches a method of synthesizing a large variety of hyperbranched polyesters (Page 296, Column 1, Lines 1-3) using enzymes as catalysts (Page 293, Columns 1-2, Experimental Part).

As both Park and Frey relate to methods of producing hyperbranched polyesters, it would have been obvious to one having ordinary skill in the art at the time of the invention to use the enzyme catalyst of Frey in the polymerization of Park for the purpose of synthesizing polymers that are useful for biomedical applications due to their lack of heavy metals (Frey, Page 296, Column 1, Lines 8-12).

8. Claims 13-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al., as applied to claims 1 and 12 above, (Cationic Hyperbranched Poly(Amino Ester): A Novel Class of DNA Condensing Molecule with Cationic Surface, Biodegradable Three-Dimensional Structure, and Tertiary Amine Groups in the Interior, *J. Am. Chem. Soc.* **2001**, 123, 2460-2461), in view of Bruchmann et al (WO02/36695 using US 7,151,153 as a translation).

Regarding claims 13 and 14, Park discloses the limitations of claim 12 as set forth above. The reference does not explicitly disclose the process comprising reacting the hyperbranched polymer with a hydrophilic compound.

Bruchmann teaches a product and process of preparing hyperbranched polymers using monomers and catalyst addition further comprising reacting the hyperbranched polymer with a hydrophilic compound (Column 5, Lines 33-34)

As both Bruchmann and Park teach a method of producing, and a hyperbranched polymer product, it would have been obvious to one having ordinary skill

in the art at the time of the invention to use the step of reacting the hydrophilic compounds of Bruchmann with the hyperbranched polymer of Park for the purpose of adapting the polymers for use in printing ink (Bruchmann: Column 5, Lines 33-35).

Regarding claims 15 and 16, Park discloses the limitations of claim 12 as set forth above. The reference does not explicitly disclose the process comprising reacting the hyperbranched polymer with at least one hydrophobic alcohol.

Bruchmann teaches a product and process of preparing hyperbranched polymers using monomers and catalyst addition and further comprising reacting the hyperbranched polymer with at least one hydrophobic alcohol (Column 5, Lines 55-58).

It would have been obvious to one having ordinary skill in the art at the time of the invention to use the step of reacting the hydrophobic alcohol of Bruchmann with the hyperbranched polymer of Park for the purpose of adapting the polymers for use in printing ink (Bruchmann: Column 5, Lines 33-35).

Regarding claims 17 and 18, Park discloses the limitations of claim 12 as set forth above. The reference does not explicitly disclose the process comprising reacting the hyperbranched polymer with at least one alcohol or amine which has an ethylenically unsaturated double bond.

Bruchmann teaches a product and process of preparing hyperbranched polymers using monomers and catalyst addition further comprising reacting the hyperbranched polymer with at least one alcohol or amine which has an ethylenically unsaturated double bond (Column 6, Lines 18-25).



It would have been obvious to one having ordinary skill in the art at the time of the invention to use the step of reacting the with at least one alcohol or amine which has an ethylenically unsaturated double bond of Bruchmann with the hyperbranched polymer of Park for the purpose using in inks for offset of letterpress printing (Column 6, Lines 16-18).

Regarding claims 19-21, Park discloses the limitations of claim 12 as set forth above. Additionally, the reference teaches a hyperbranched polymer having the functional groups  $-OH$ ,  $-SH$ ,  $-COOH$ , and  $-COOR$ . The reference does not explicitly disclose a method for producing a formulation wherein said formulation is an adhesive, a coating, a foam, a covering, a printing ink or a varnish, comprising adding the hyperbranched polymer according to claim 12 to said formulation nor a printing ink or print varnish formulation using said hyperbranched polymer.

Bruchmann teaches a method for producing a formulation wherein said formulation is an adhesive, a coating, a foam, a covering, a printing ink or a varnish, comprising adding a hyperbranched polymer to said formulation and a printing ink and print varnish formulation using said hyperbranched polymer due to the suitability of the functional groups  $-OH$ ,  $-SH$ ,  $-COOH$ , and  $-COOR$  for the task (Column 5, Lines 27-47).

It would have been obvious to one having ordinary skill in the art at the time of the invention to use the hyperbranched polymer of Park as a printing ink or print varnish, as taught by Bruchmann, for the purpose of capitalizing on their exposed functional groups and their reactivity to hydrophobic or hydrophilic reactants as needed for each printing application (Bruchmann: Column 5, Lines 27-47).

Regarding claim 22, modified Park discloses the limitations of claim 17 as set forth above. As printing varnishes and printing inks are generally identical except the varnishes lack colorant (Bruchmann: Column 1, Lines 34-36) and the use of hyperbranched polymers modified with ethyleneically unsaturated alcohols as printing inks are taught (Bruchmann: Column 6, Lines 16-21) it would have been obvious to one having ordinary skill in the art at the time of the invention to use the modified hyperbranched polymers of modified Park as a printing varnish.

### ***Response to Arguments***

9. Applicant's arguments filed 8 May 2008 have been fully considered but they are not persuasive. A new grounds of rejection has been set forth above based on Applicant's claim amendments.

10. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the presence or absence of the polyfunctional compound) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

11. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the

references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Applicant asserts that the only commonality between Park and Bruchmann is that they are both drawn to hyperbranched polymers. In the first paragraph of the first column of the first page of the Park reference, the author notes that hyperbranched polymers have many applications including, among others, surface coatings. To one of ordinary skill in the art at the time of the invention, printing inks and varnishes, such as those taught by Bruchmann are nothing more than surface coatings. As such, one having ordinary skill in the art at the time of the invention would have been motivated by the suggestion of use as a surface coating of Park as well as its hyperbranched structure having exposed functional groups, ideal for printing, to combine the polymer of Park with the modification and use as a printing ink or varnish of Bruchmann for the reasons described above.

### ***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John M. Maksymonko whose telephone number is (571)270-3239. The examiner can normally be reached on Monday-Thursday, 7:00AM-4:30PM, and alternating Fridays 7:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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JM

17 July 2008

/Randy Gulakowski/  
Supervisory Patent Examiner, Art Unit 1796